

AUTHOR INDEX

A

Abelson, P. H., 330, 332
 Åberg, E., 206, 213, 214
 Abersold, J. N., 296, 297
 Addicott, F. T., 232, 234, 235, 236
 Adler, E., 29, 30, 32, 46
 Agarwala, S. C., 43, 44
 Agate, J. N., 302, 305, 307
 Ahlgren, G. H., 220
 Alban, E. K., 209
 Alberda, T., 5, 8
 Albert, A., 7
 Albrecht, H. R., 216
 Aldrich, R. A., 126, 128
 Aleshin, S. N., 15
 Alexander, P., 336
 Allen, M. B., 11, 134
 Allen, R. C., 245
 Allen, T. C., 207
 Allison, F. E., 155, 159
 Allmendinger, D. F., 303, 304, 305
 Allsopp, A., 286
 Altman, K. I., 120, 135
 Amoureux, G., 170
 Andersen, E. T., 217
 Andersen, S., 214
 Anderson, A. J., 42, 44
 Anderson, G. R., 36
 Anderson, H. B., 31
 Anderson, T. F., 335
 Andrews, J. S., 124
 Angerer, C. A., 330
 Angerer, H. H., 330
 Appleman, C. O., 153, 154
 Arakeri, H. R., 210
 Arens, K., 334
 Arisz, W. H., 8, 12, 15, 16, 17
 Arle, H. F., 218
 Arnold, W., 53, 73
 Arnold, W. A., 72, 73, 101
 Arnon, D. I., 3, 26, 31, 34, 40, 45, 47, 99, 108, 109, 110
 Aronoff, S., 6, 91, 92, 93, 95, 96, 102, 103
 Arvanitaki, A., 135
 Asai, G. N., 245
 Ashby, W. C., 175, 182, 188
 Askenasy, E., 277
 Askevold, R., 125
 Atkinson, H. F., 330
 Audus, L. J., 174, 201, 211, 218
 Auerbach, V. H., 11, 16
 Aufdemgarten, H., 79, 81, 83, 96, 101
 Ausherman, L. E., 239

Avery, G. S., Jr., 29, 172, 173, 178, 185, 203, 239, 271, 281
 Axtman, G., 236, 271
 Ayako, H. N., 181

B

Baddiley, J., 28
 Badin, E. J., 94, 107
 Baeder, D. H., 330
 Bailes, R. H., 7
 Bailey, K., 26
 Baker, D., 38
 Baker, R. S., 191, 192
 Ball, 233
 Ball, C. D., 213, 220
 Ball, E., 157, 275, 276, 277, 278, 284
 Ball, E. G., 16
 Bamann, E., 31
 Bancroft, W. D., 205
 Bárány, E. H., 329
 Barclay, C., 46
 Barfi, R. F., 29, 30
 Barga, J. von, see von Barga, J.
 Barker, J., 147
 Barker-Jorgensen, C., 328, 329
 Barnell, H. R., 155, 161
 Barnes, H. D., 125
 Barrer, R. M., 336
 Barron, A. G., 39
 Barron, E. S. G., 8, 39
 Barrons, K. C., 206
 Barry, J. P., 213
 Bartel, A. T., 253
 Bartholomew, E. T., 317
 Bartley, M. A., 232, 234, 235
 Bassham, J. A., 28, 90, 91, 92, 93, 94, 96, 101, 102, 103
 Bates, J. C., 220
 Batta, G., 330
 Battley, H., 106
 Baur, H., 32
 Bazin, S., 330
 Beament, J. W. L., 330
 Bear, E. J., 25
 Bear, F. E., 4
 Beckley, V. A., 214
 Beevers, H., 39, 161
 Begany, A. J., 330
 Beil, J. M., 207, 208
 Belval, H., 39
 Bender, E. K., 215
 Bennet-Clark, T. A., 17, 161, 334
 Benson, A., 28, 53, 54, 68, 87, 89, 90, 91, 92, 93, 94,

95, 96, 98, 100, 101, 102, 103, 104, 112
 Bentley, R., 119
 Berg, C., 163
 Berger, J., 29, 31, 45, 172, 173, 178
 Berger, K. C., 36
 Berger, L., 26, 46
 Bernhauer, K., 27
 Berthelot, A., 170, 233
 Bertrand, D., 39
 Bertrand, G., 39
 Bexon, D., 17, 161
 Biale, J. B., 148, 153, 194
 Biddulph, O., 1, 7, 18, 19
 Bidstrup, P. L., 203
 Biehl, R., 253
 Bierman, H. E., 220
 Birch, S. F., 207
 Bjorn, M. K., 219
 Blackman, F. F., 145, 148, 153, 154, 160
 Blackman, G. E., 199, 200, 201, 202, 203, 205, 206, 216, 217, 219
 Blake, M. A., 245, 246
 Blakemore, F., 302, 305
 Blakeslee, A. F., 189, 237, 271, 285
 Blanchard, K. L., 213
 Bledsoe, R. W., 18
 Blinks, L. R., 77, 78, 83, 112, 113, 129
 Blish, M. J., 245, 247, 248
 Bloch, K., 122
 Bodine, J. H., 203
 Boell, E. J., 203
 Bogen, H. J., 262
 Bogorad, L., 133, 137
 Bohstadt, G., 332
 Bonner, D. M., 183, 236
 Bonner, H., 287
 Bonner, J., 5, 32, 33, 40, 159, 169, 170, 171, 174, 175, 176, 177, 179, 180, 182, 183, 185, 186, 190, 191, 192, 193, 203, 204, 232, 234, 235, 236, 238, 239, 271, 287
 Booi, H. L., 182, 211, 336
 Borri, M., 216
 Borthwick, H. A., 191, 193
 Boswell, J. G., 38, 40, 147, 152, 153, 154
 Bosworth, T. J., 302, 305
 Bouillenne, R., 169
 Bouillenne-Walrand, M., 169
 Boulénaz, A., 214
 Boussingault, J. B., 310
 Bower, C. A., 4
 Bower, F. O., 269
 Bowling, J. D., 25

- Boyd, L. J., 209
 Boysen-Jensen, P., 173, 174, 180, 186
 Bracco, M., 136
 Bradfield, J. R. G., 37
 Brandes, E. W., 181, 186
 Braun, A. C., 232
 Bredemann, G., 293, 302, 303, 309, 310
 Bregoff, H. M., 106
 Brenchley, W. E., 44
 Brennan, E. G., 303, 304, 308
 Brian, P. W., 203
 Brierley, W. G., 245, 246
 Briggs, D. R., 248, 249, 266
 Briggs, G. E., 3, 15
 Briggs, G. M., 206
 Brink, N. G., 40
 Brink, R. A., 239
 Brisley, H. R., 300
 Britten, E. J., 189
 Brooks, J. A., 72, 73
 Brooks, P. M., 297
 Brown, A. H., 84, 95, 96
 Brown, J. W., 201, 211
 Brown, R., 17
 Brown, R. G., 153, 154
 Brown, R. T., 247
 Brown, W. J., 334
 Brover, T. C., 1, 17
 Brues, A. M., 327
 Bruner, H. E., 210
 Bruns, F., 350
 Brvner, L. C., 298, 300
 Bucher, N. L. R., 219
 Buchholtz, K. P., 206, 215, 216
 Buchman, E. R., 236
 Büchsel, R., 178
 Bull, H., 210
 Bünning, E., 169, 193, 279
 Buré, J., 213
 Burk, D., 58, 67, 79, 82, 88, 112, 118, 145, 149
 Burkholder, P. R., 232, 281, 286
 Burlet, E., 238
 Burn, G. P., 326, 330, 333
 Burr, G. O., 76
 Burrell, R. C., 94
 Burris, R. H., 18, 37, 95, 190, 191, 192
 Burström, H., 1, 6, 9, 17, 19, 32, 42, 188, 201, 232, 234, 235, 238
 Burton, D. F., 213
 Byer, A., 170, 171, 173
- C
- Calvin, M., 7, 28, 53, 54, 57, 68, 84, 87, 89, 90, 91, 92, 93, 94, 95, 96, 98, 100, 101, 102, 103, 104, 107, 112
 Campbell, J., 170
 Campbell, J. M., 5
 Campbell, R. S., 210
 Camus, G., 188, 238
 Caplin, S. M., 9, 237, 285
 Cappelletti, C., 236
 Carder, A. C., 220
 Cario, G., 61
 Carlisle, H., 219
 Carlson, R. F., 216, 218, 220
 Carpenter, T. L., 207
 Carr, C. W., 332
 Carroll, J. C., 250, 261, 265
 Carter, E. P., 210
 Casarett, G. W., 120
 Cavill, G. W. K., 205
 Ceithaml, J., 30
 Chabrolin, C., 205
 Chalazonitis, N., 135
 Chamberlin, J. C., 207
 Chance, B., 110
 Chandler, R. C., 248
 Chandler, W. H., 245
 Chaney, A. L., 293, 311
 Chargaif, E., 336
 Chenery, E. M., 7
 Chesters, C. G. C., 37
 Chiappelli, R., 215
 Chi-Kien, K., 211
 Chin, C. H., 11
 Chouard, P., 169
 Choudhuri, J. K., 148, 149, 153, 154
 Christensen, S. A. K., 162
 Christian, W., 307
 Churchill, B. R., 216, 220
 Churchill, H. V., 305
 Ciferri, R., 214
 Clagett, C. O., 213
 Clark, B. E., 174
 Clark, D. G., 18, 19
 Clark, T. A. B., see Bennet-Clark, T. A.
 Clayson, D. H. F., 39
 Clayton, G. D., 293
 Clendenning, K. A., 75, 82, 95, 108, 110, 112, 113
 Clifton, C. E., 203, 204
 Clowes, G. H. A., 203, 204, 205
 Cobb, D. M., 332
 Cohen, P. P., 28
 Cohen, S., 125
 Cohn, W. E., 327
 Cole, L. W. L., 207
 Collier, T. R., 297, 300
 Colowick, S. P., 26, 46, 184
 Comptom, O. C., 302, 304, 305, 306, 309
 Conklin, M. E., 189, 237, 271, 285
 Conn, E., 28, 29, 30, 111
 Conway, E. J., 331, 332
 Cooil, B. J., 4, 25, 26
 Cook, C. W., 251
 Cook, W. H., 201
 Cooper, D. C., 239
 Cooper, H. C., 9
 Cooper, O., 16
 Cori, C. F., 26, 46
 Cori, G. T., 26
 Cornman, J. F., 209
 Corwin, H. A., 124
 Cova, V., 239
 Covo, G. A., 204
 Cowart, L. E., 206, 210
 Cowie, D. B., 8, 13, 329, 330, 333, 334
 Cowles, P. B., 205
 Cox, L. G., 239
 Crafts, A. S., 205, 207, 208, 216, 220
 Cragg, J. M., 38, 40, 43
 Crane, E. E., 12
 Crane, H. L., 4
 Crank, J., 336
 Creasy, L. E., 206
 Creighton, H. B., 185, 281
 Crocioni, A., 221
 Crocker, W., 300, 301, 310, 311, 315, 316
 Crook, E. M., 43
 Cross, R. J., 204, 297, 334
 Cullinan, F. P., 245, 246
 Cunningham, G. H., 207
 Currier, H. B., 220
 Curtis, J. T., 236
 Curtis, O. F., 18, 19
 Cutler, G. H., 245, 247
- D
- Daines, R. H., 303, 304, 308
 Dalbro, S., 193, 194
 d'Amato, F., 214
 Danby, C. J., 13, 333
 Danielli, J. F., 2, 15, 324, 326
 Darley, E. F., 311, 312, 313, 314
 Darroch, J. G., 250, 251
 Darrow, R. A., 218
 Datta, N. P., 42
 Davidson, O. W., 245, 246
 Davies, J. T., 336
 Davies, R. E., 9, 12, 332
 Davis, E. A., 88, 134
 Davis, F. F., 212
 Davis, G. E., 211
 Davis, W. C., 211
 Davison, C. D., 158
 Davison, D. C., 32, 38, 43
 Dawson, H., 2, 15, 324
 Dawson, C. R., 38, 39
 Day, B. E., 220
 Day, D., 236
 Day, R., 37
 Dean, R. S., 299
 Dearborn, C. H., 206, 215
 Deichmann-Gruebler, W., 209
 Deiman, 310
 DeKock, P. C., 39
 Delgado, R. F., 218
 DeMeio, R. H., 39
 de Mello, R. P., 126
 Denison, F. W., Jr., 37

Dent, K. W., 153, 154
 Denward, T., 213, 217
 de Ong, E. R., 207, 303, 304
 Derby, R. T., 146
 de Ropp, R. S., 137, 236, 239
 Dervinis, A., 330
 Dettweiler, C., 178
 Deusse, P., 189
 de Vázquez, E. S., 169, 170,
 173, 176, 177, 186
 Devirian, P. S., 235, 236
 DeVita, P., 330
 Dexter, S. T., 250
 Dhillon, A. S., 211
 Dillman, A. C., 247
 Diwald, K., 250, 254, 255,
 256
 Dixon, K. C., 145, 149, 327
 Dixon, M., 26, 27, 28, 37, 47
 Dobriner, K., 124
 Dodds, E. C., 203
 Dormer, K. J., 234, 239
 Dorrough, G. D., 57
 Dorries, W., 294
 Dostal, R., 186, 187, 188,
 194
 Doubt, S. L., 315
 Doxey, D., 214, 219
 Draper, M. H., 333
 Drawert, H., 169
 DuBuy, H. G., 11, 16, 159
 Ducet, G., 33, 130
 Dufait, R., 307
 Duggar, B. M., 232, 234,
 235, 239
 Duhamet, L., 237, 238
 Dunham, R. S., 210, 216
 Dunlap, A. A., 212
 Duryee, W. R., 330, 332
 du Toit, R., 218
 Dutton, H. J., 62, 135
 Dutton, W. C., 220, 221
 Dynesen, E., 182

E

Eames, A. J., 218
 Earle, T. T., 218
 Easley, T., 209
 Easterbrook, B., 214, 218
 Eaton, F. M., 184
 Eaton, S. V., 28
 Eddy, A. A., 13, 333
 Edibacher, S., 32
 Edmondson, Y. H., 40
 Egami, F., 33
 Eggert, R., 246
 Eggleston, L. V., 324, 334
 Ehrmantraut, H. C., 75, 82,
 112, 113
 Elder, W. C., 215
 Elgabaly, M. M., 4
 Eliason, E. J., 209
 Elliot, L., 29, 30
 Eltinge, E. T., 37, 233
 Elvehjem, C. A., 40
 Emanuelli, A., 216

Emerson, R., 53, 73, 78, 82,
 83
 Emerson, R. L., 28
 Engard, C. J., 181
 Engel, R. E., 220
 Engelhardt, V. A., 160
 Ennis, W. B., 203, 219
 Ergle, D. R., 212
 Erickson, L. C., 218
 Eriksson, E., 3, 15
 Euler, H. v., 29, 30, 32, 46,
 136
 Evans, H., 216
 Evans, L. S., 209
 Evenari, M., 173
 Evstigneev, W. B., 59, 60
 Eyring, H., 109
 Eyster, H. C., 110
 Eyzaguirre, C., 219

F

Fabre, L. A., 334
 Fager, E. W., 53, 54, 83, 84,
 91, 92, 93, 95, 96, 98, 100,
 101, 102, 103, 104, 105
 Fan, H. Y., 330
 Farwell, E. D., 219
 Felsher, R. Z., 30
 Feng, T. P., 328
 Fenn, W. O., 327, 332
 Fernholz, D. L., 245
 Ferrario, M., 215
 Ferrer, R., 209, 210
 Ferri, M. G., 180, 182, 183
 Fidler, J. C., 147, 148, 149,
 152, 156, 158
 Fiedler, H., 232, 234, 235
 Field, J., 203
 Finney, D. J., 201
 Fischer, E., 327
 Fischer, H., 53, 115, 123,
 125, 127, 131
 Fisher, C. E., 218
 Fitt, T. C., 297
 Fleckenstein, A., 328
 Fleischer, W. E., 26, 28
 Flesch, W., 57
 Flexner, L. B., 329, 334
 Flynn, F., 332
 Fogg, G. E., 201, 205
 Folk, B. P., 219
 Folkers, K., 40
 Förster, T., 61, 63, 73, 75
 Forward, D., 155, 161, 163,
 165, 166
 Foster, A. S., 271
 Foster, J. W., 37, 148
 Fourie, P. S. S., 125
 Francis, T., 238
 Franck, J., 9, 12, 53, 55, 56,
 58, 59, 61, 64, 67, 68, 69,
 71, 75, 76, 77, 78, 79, 80,
 83, 89
 Franck, U., 55, 56, 62
 Frank, S. R., 132
 Frankel, R., 330

Franklin, E. C., 295, 301, 315
 Franklyn, J., 37
 Freed, V. H., 220
 Freeland, R. O., 213
 French, C. S., 55, 56, 69, 72,
 76, 89, 108, 117, 132
 French, G. W., 206
 Frenkel, A., 8, 335
 Frenkel, A. W., 91, 100, 106,
 130
 Frenkel, J., 61
 Frey-Wyssling, A., 15
 Friedman, B. A., 238
 Friesen, H. A., 213
 Fuelleman, R. F., 217
 Funke, H., 171, 172, 173, 174,
 178, 185, 186

G

Gaetjens, C. F., 219
 Gafaer, W. M., 293
 Gaffron, H., 53, 54, 58, 71,
 73, 83, 84, 91, 92, 93, 95,
 96, 98, 99, 100, 101, 102,
 103, 104, 105, 106, 108
 110, 111, 112
 Gale, E. F., 28, 205
 Gall, H. J. F., 212
 Galloway, R., 214
 Gallup, A. H., 211
 Galston, A. W., 169, 180, 183,
 190, 191, 192, 193, 286
 Gardiner, M., 238
 Gardner, V. R., 247
 Garrison, R., 272, 283
 Gasvoda, B., 8
 Gauch, H. G., 4
 Caudin, O., 330
 Gaulton, H. S., 218
 Gautheret, R., 284, 287
 Gautheret, R. J., 214, 215,
 231, 233, 235, 236, 237,
 238, 239, 285
 Gavrilova, V. A., 59, 60
 Geiger-Hüber, M., 238
 Genevois, L., 156
 Gerloff, G. C., 36
 Gerretsen, F. C., 35, 109
 Gerschman, R., 327
 Gertsch, M. E., 209
 Gest, H., 106
 Gibbs, M., 93, 105
 Gilbert, P. A., 221
 Gilbert, S. G., 136
 Gilder, H., 33, 34, 35, 123,
 127, 129, 130, 138
 Gioelli, F., 236, 239
 Glassman, H. N., 334
 Glasstone, V., 233
 Gledhill, W. S., 7
 Goddard, D., 32
 Goddard, D. R., 33, 129, 145,
 146, 150, 152, 153, 156, 157,
 159
 Goffin, C. C., 336
 Goldacre, P. L., 192, 212

- Gollub, M. C., 29, 30, 32
 Goodale, T. C., 28, 91, 92
 Goodgal, S. H., 213
 Goodman, J., 330
 Goodwin, R. H., 126, 135, 173, 174
 Gordon, M., 336
 Gordon, S. A., 169, 170, 173, 176, 178, 180, 181, 182, 183, 190, 193
 Gorham, P. R., 108
 Goris, A., 235
 Gortner, A., 174
 Gottschalk, A., 152, 157, 161
 Gough, D., 336
 Gould, C. J., 304
 Gould, R. A., 295, 301, 315
 Graham, S. A., 207
 Grandfield, C. O., 248
 Granick, S., 26, 33, 34, 35, 115, 123, 127, 129, 130, 131, 132, 134, 137, 138, 139
 Gray, C. H., 122, 125, 126, 128
 Gray, G. P., 207
 Green, D. E., 11, 16, 28, 45, 204
 Green, H. H., 302, 305
 Green, J. R., 208
 Green, J. W., 334
 Green, K. R., 218
 Greenham, C. G., 212
 Gregor, H. P., 336
 Gregory, F. G., 17, 239
 Gregory, L. E., 176, 177
 Greig, M. E., 330
 Greulich, V. A., 213
 Greville, G. D., 203
 Grieg, A., 125
 Grigsby, B. H., 209, 216, 219, 220
 Grinstein, M., 120, 125, 126, 128
 Gruebler, W. D., see Deichmann-Gruebler, W.
 Grunbein, M. L., 188
 Grumert, R. R., 332
 Grummer, R. H., 332
 Gunkel, J. E., 186, 281
 Gunsalas, I. C., 28, 31, 183
 Gunther, G., 30
 Gunther, H., 29, 32, 46
 Gupta, S. S., 153
 Gustafson, F. G., 153, 169, 173, 180, 184, 317
 Gutsche, A. E., 232, 237, 286
 Guttentberg, H. v., 169, 172, 173, 177, 178, 179, 185, 187, 193
- H
- Haagen-Smit, A. J., 234, 237, 239, 271, 311, 312, 313, 314
 Haardick, H., 336
 Haas, E., 204
 Haas, V. A., 28, 91, 92, 96, 102
 Haberlandt, G., 231
 Hackney, F. M. V., 149
 Hagen, C. R., 213
 Hagood, E. S., 210
 Hagsand, E., 214, 216
 Hahn, F., 330
 Hale, J. H., 126, 130
 Hall, A. G., 96, 102
 Halliday, D. J., 214, 215, 216, 219
 Halpern, B. N., 330
 Hamming, W. J., 293, 311
 Hamner, C. L., 211, 212, 213, 216, 218, 220
 Hand, M. E., 169, 191
 Handley, R., 14
 Hansch, C. H., 211
 Hansen, C. M., 206
 Harary, I., 29, 30
 Harmer, P. M., 29
 Harrer, C. J., 39, 204
 Harris, E. J., 326, 330, 333
 Harris, H. C., 18
 Harris, V. C., 208, 210, 218, 220
 Harrison, B. F., 298
 Harrison, J. W. E., 219
 Hartigan, D., 218
 Hartley, G. S., 336
 Hartman, W. J., 46
 Hartree, E. F., 11, 47
 Hartung, E. J., 328, 336
 Hartzell, A., 317
 Harvey, E. M., 315
 Haselhoff, E., 293, 294, 302, 303, 309, 310
 Haselhoff, W., 293, 302, 309, 310
 Haskins, C. P., 40, 333
 Haskins, F. A., 183
 Hassid, W. Z., 53, 91
 Hatcher, E. S. J., 185, 186, 189
 Havis, J. R., 208
 Hawkinson, V., 124, 125, 126, 128
 Haxo, F. T., 113, 129
 Hayes, F. R., 336
 Heal, R. R., 214
 Hearon, J. Z., 336
 Hecht, L., 331, 336
 Heimann, H., 293
 Helmsch, C., 5
 Helder, R. J., 8, 17
 Helgeson, E. A., 213
 Heller, R., 232, 233
 Hellerman, L. J., 31
 Hellman, L. M., 329
 Hemberg, T., 176, 177, 178, 181, 186
 Hems, R., 324, 334
 Henckel, P. A., 249
 Henderson, J. H. M., 180, 211, 239
 Hendlin, D., 40
 Hendricks, R. H., 44, 296, 297, 298, 300, 303, 305, 307, 308, 309, 310, 317
 Hendricks, S. B., 18, 88, 193
 Henriett, J., 218
 Henry, J., 330
 Herbert, F. B., 209
 Herbert, O., 45
 Hermansen, J., 214
 Hertel, H., 328
 Herter, C. A., 175
 Herzfeld, K. F., 71
 Hewitt, E. J., 7, 25, 26, 32, 34, 35, 36, 41, 42, 43, 44
 Hewson, E. W., 299
 Heyne, E. G., 260, 261, 264
 Highkin, H. R., 135, 136
 Hildebrandt, A. C., 214, 232, 234, 235, 237, 239
 Hill, A. V., 328
 Hill, E. S., 47
 Hill, E. V., 219
 Hill, G. R., 44, 296, 297, 298, 300, 303, 305, 307, 308, 309, 310, 317
 Hill, R., 34, 40, 53, 72, 107, 130
 Hiller, L., 136
 Hilli, A., 217
 Hingerty, D., 331
 Hinshelwood, C., 13, 333
 Hinshelwood, C. N., 330
 Hirmer, M., 280
 Hirsch, A., 53, 55, 57
 Hirth, L., 239
 Hitchcock, A. E., 169, 170, 175, 213, 217, 218, 308, 315, 316
 Hoagland, D. R., 11, 18
 Hodge, A. J., 333
 Hodgson, R. E., 219
 Hodgkin, A. L., 326, 327
 Hoffer, K., 36
 Hoffman, O. L., 220
 Höfler, K., 251, 252, 253, 254
 Hofmann, H., 123, 125
 Hofmeister, W., 279
 Hogeboom, G. H., 11, 16
 Hogness, T. R., 204
 Holden, C., 33
 Holland, W. C., 330
 Holly, K., 201, 205, 215, 216, 217
 Holmes, E., 214
 Holmes, J. A., 295, 301, 315
 Holm-Jensen, I., 14
 Holt, A. A., 72, 73
 Holt, A. S., 117
 Holt, L. B., 125, 126
 Hoover, S. R., 155, 159
 Hopkins, H. T., 18
 Hoppe-Seyler, F., 115
 Hora, F. B., 148, 153, 156
 Hoskins, W. M., 330
 Hotchkiss, R. D., 205
 Houlihan, R. K., 330
 Hubbard, R., 124
 Hüber, M. G., see

Geiger-Hüber, M.
Hudson, R. F., 336
Hull, H. M., 311, 312, 313,
314
Humphries, E. C., 5, 6, 18
Hunter, D., 203
Hurst, H., 334
Hutner, S. H., 5, 40, 137,
333
Huxley, J. S., 280
Huzisige, H., 74, 75, 76
Hylmö, B., 216

I

Iglauer, A., 27
Iljin, W. S., 36
Irving, G. W., 211
Irving, H., 34
Iterson, G. van, see
van Iterson, G.
Ivens, G. W., 201, 219
Ivie, J. O., 297

J

Jackman, C. R., 217
Jackson, S., 330
Jacob, K. D., 302
Jacobs, M. H., 334
Jacobsen, G., 216
Jacobson, L., 5, 14, 25
Jacquot, C., 238
Jägerstahl, G., 206
Jagoe, R. B., 215
James, W. O., 38, 39, 40,
43, 145, 148, 153, 156,
158, 159
Janison, P. L. L., see
Lovett-Janison, P. L.
Jenkins, J. M., 217
Jensen, I. H., see
Holm-Jensen, I.
Jensen, K. A., 182
Jensen, P. B., see
Boysen-Jensen, P.
Jodrey, L. H., 336
Joerges, E. L., see
Lehle-Joerges, E.
Johnson, A. B., 300
Johnson, F., 303, 304, 305
Johnson, M. J., 31, 38, 45,
159
Johnston, M., 215
Johnston, S., 206
Jones, E. W., 25, 26, 32, 41,
42, 43, 44
Jones, L. H., 6, 44
Jones, W. W., 300
Jordan, J. V., 36
Jørgensen, C. B., see
Barker-Jørgensen, C.
Jost, W., 336
Judkins, W. P., 174
Juel, I., 174
Julander, O., 260, 261, 264
Jung, F., 334

K

Kagy, J. F., 205
Kalckar, H. M., 26, 28
Kalinowski, L. W., 211
Kalinowski, M. L., 211
Kallio, R. E., 183
Kalinitzky, G., 30, 46
Kamen, M. D., 11, 53, 91,
106, 120, 126, 128, 325,
329, 335
Kaplan, N. O., 184
Kasha, M., 57, 58
Katz, B., 326, 327
Katz, M., 293, 298, 299, 300
Kausche, G. A., 336
Kautsky, H., 53, 55, 56, 57,
62
Kawalki, W., 176
Ke, C. L., 58
Kehoe, R. A., 209
Keilin, D., 11, 39, 47
Kelley, W. P., 326
Kelly, S., 203, 212
Keltch, A. K., 204
Kempner, W., 99
Kendrick, J. B., 311, 312
Kennard, W. D., 247
Kent, M., 174
Kenten, R. H., 36
Kenway, C. B., 250, 251
Kersten, J. A. H., 56, 64, 67,
70, 71
Kessler, W., 266
Keynes, R. D., 327
Kien, K. C., see
Chi-Kien, K.
Kiessling, W., 131
Kimmelman, L. J., 334
King, C. G., 39
King, G., 193
King, G. S., 239
King, H. M., 14
King, J. E., 219
King, L. J., 221
Kirkpatrick, H., 217, 218
Kitzmillier, K. V., 209
Klein, R. M., 213
Klemperer, F., 39
Kliman, S., 34
Klingman, D. L., 216
Klotz, I. M., 205
Klüver, H., 126
Kneen, E., 245, 247, 248
Knight, H., 207
Knight, L. I., 315
Knobloch, H., 27
Koenig, M. L. G., 108
Köfler, L., 239
Kögl, F., 183
Kok, B., 81, 83
Kolbel, H., 334
Kole, A. P., 214, 215
Konis, E., 260
Koniuszy, F. R., 40
Kopac, N. J., 323
Korkes, S., 31

Kornberg, A., 28
Korsenovsky, M., 88
Koski, V. M., 126, 131, 132,
133, 136
Kostermans, D. G. F. R.,
183
Kostychev, 154
Kotte, W., 231, 235, 239,
304
Kraemer, L. M., 28, 29, 30,
111
Krahl, M. E., 203, 204, 205
Kramer, M., 175, 176
Kramer, P. J., 6
Kramptz, L. O., 27, 30
Krasnovskii, A. A., 59, 60
Krebs, H. A., 31, 156, 157,
324, 334
Kribben, F. J., 187
Krishnan, P. S., 26
Kristiansen, J., 38
Krogh, A., 14, 19, 331
Kropelin, L., 187
Krotkov, G., 93
Kulescha, Z., 171, 188, 238,
239
Künning, H., 187
Kvamme, O. J., 213

L

Lachaux, M., 235, 239
Lachman, W. H., 206, 207,
208, 215, 220
Lackey, M. D., 11, 16
Lacroix, L., 209, 214
Lad, D. T., 78, 80
Laibach, F., 187
Lal, K. N., 253
Lambrecht, J. A., 221
Lamm, O., 333
Lampit, L. H., 39
Landon, R. H., 245
Lane, R. H., 188
Lansing, A. I., 329
Lardy, H. A., 25, 30
Larrabee, C., 8, 335
Larsen, C. M., 174
Larsen, P., 173, 174, 175,
179, 181, 182, 183, 185,
189, 190, 191
Larson, E. A., 124
LaRue, C. D., 239, 271
Laude, H. H., 250, 260, 261,
264
Lauwerenburgh, 310
LaVelle, G. A., 213
Lawrence, N. S., 108
Lazarus, M., 334
Leach, W., 148, 154, 155,
163, 164
LeCompte, S. B., 209
LeCoq, H., 330
Lee, O. C., 215
Leeper, G. W., 9
Lees, A. D., 334
LeFevre, P. G., 334

- Legge, J. W., 33, 34, 119,
 122, 123, 127, 128, 129
 Legrand, G., 39
 Lehle-Joerges, E., 172, 173,
 177, 178, 179, 185
 Leloir, L. F., 28
 Lemberg, R., 33, 34, 119,
 122, 123, 127, 128, 129
 Leonard, E., 336
 Leonard, O. A., 208, 210,
 218
 Leone, I. A., 303, 304, 308
 Leopold, A. C., 187
 Levi, H., 55, 324, 328, 331
 Levitt, J., 7, 245, 246, 247,
 248, 249, 254, 255, 256,
 259, 264, 266
 Levy, H., 33
 Lewis, C. M., 78, 82, 83
 Lewis, S., 39
 Lhoste, J., 219
 Lichtstein, H. C., 28
 Liebe, H., 330
 Liebich, H., 34
 Lilienthal, J. L., 219
 Lindau, G., 293, 294, 303,
 309
 Lindemann, B., 334
 Linder, P. J., 211
 Linderholm, H., 329
 Lindgren, D. L., 317
 Link, G. K. K., 213
 Linschitz, H., 57
 Linser, H., 173, 174, 175,
 181, 187, 188
 Lipmann, F., 12, 27, 28, 95,
 99, 157, 159, 204
 Liu, Y. M., 328
 Livingston, R., 56, 57, 58,
 59, 60, 62, 67, 74, 76
 Lloyd, F. E., 263
 Lockhart, E. E., 158
 Lottfield, J. V. G., 296
 London, I., 120, 126, 127,
 128
 Long, A. L., 239
 Longchamp, R., 215
 Loo, S. W., 236
 Loomis, W. D., 32
 Loomis, W. F., 11, 12, 16,
 159, 204
 Lorente de No, R., 328
 Lorenz, R., 260
 Loustalot, A. J., 209, 210,
 218
 Lovett-Janison, P. L., 39
 Lowe, J. S., 6, 232, 234, 240
 Lowens, M., 336
 Lucas, E. H., 211
 Luckner, H., 330
 Luckwill, L. C., 174, 189,
 216
 Ludwig, C. A., 155, 159
 Luecke, R. W., 212
 Lumry, R., 109
 Lundegardh, H., 1, 4, 9, 10,
 11, 14, 15, 16, 17, 18, 31,
 33, 334
 Lüttgens, W., 100, 109
 Lynch, P. B., 214, 216
- M
- McAlister, D. F., 250
 McAlister, E. D., 55, 69, 78,
 83, 96, 101
 McArdle, J., 60
 McCabe, L. C., 293, 311
 McCall, G. L., 210
 McCallan, S. A. E., 317
 McClary, J. E., 232, 234, 235
 McCombs, L., 209
 McCully, W. G., 218
 Macdowall, F. D. H., 72, 99
 MacEwan, A. M., 6, 18
 McGavack, T. H., 209
 McGeorge, W. T., 36
 Machlis, L., 18
 Macht, D. J., 188
 MacIntire, W. H., 307
 McMahon, H. E., 293, 311
 McMurtrey, J. E., Jr., 25
 McSwiney, R. R., 125
 MacVicar, R., 18, 37, 184
 Mäde, A., 246
 Mader, P. P., 293, 311
 Magill, P. L., 293, 311, 312
 Maitland, P., 119
 Maizels, M., 332
 Majumdar, G. P., 271
 Maki, T. E., 253
 Maley, L., 7, 34
 Maihotra, O. N., 253
 Mallette, M. F., 38
 Malm, M., 331
 Malmgren, H., 333
 Mandl, I., 333
 Manery, J. F., 330
 Mann, P. J. G., 36
 Mann, T., 39
 Manning, W. M., 62, 134, 135
 Manning, W. M., 62, 134,
 135
 Marois, M., 329
 Marsh, P. B., 33, 153, 156,
 157
 Marsh, R. S., 247
 Marshall, E. R., 217, 220
 Marshall, H., 253
 Marshall, J., 207
 Marth, P. C., 212, 216, 219
 Martin, L. N., 305
 Martin, W. M., 254
 Maschmann, E., 31
 Massart, L., 307
 Masters, R. E., 120
 Mattson, S., 3
 Maxwell, R. E., 32
 Mayacos, D., 334
 Mayer, J. E., 9, 12
 Mazia, D., 325, 333
 Meader, E. M., 245, 246
 Meadows, M. W., 217, 218, 220
 Meagher, W. R., 3
- Mee, S., 27
 Meehan, J., 330
 Meenen, F. E., 206
 Meeuse, B. J. D., 129, 145,
 152, 159
 Mehler, A., 77
 Mehler, A. H., 108, 110, 111,
 112
 Meier, R., 335, 336
 Melander, L. W., 214, 218
 Melin, E., 6
 Mello, R. P. de, see
 de Mello, R. P.
 Mellor, D. P., 7, 34
 Mentzer, C., 219
 Merry, J., 150, 239, 271
 Meyer, E., 171, 174, 177,
 178, 186
 Meyer, J. H., 332
 Meyerhof, O., 160
 Meyers, J., 133
 Michaelis, L., 40, 47
 Middleton, J. T., 311, 312
 Migsch, H., 251, 252, 254
 Millar, F. K., 9, 298
 Miller, V. L., 303, 304, 305
 Millikan, C. R., 7, 43
 Milner, H. W., 108
 Milthorpe, F. L., 251
 Mims, V., 28
 Minarik, C. E., 199, 200,
 209, 210
 Minor, F. W., 155, 159
 Minyard, V., 212
 Mirskaja, L., 276
 Mitchell, H. H., 302
 Mitchell, H. K., 183
 Mitchell, J. E., 191
 Mitchell, J. W., 199, 208,
 211, 219, 221, 246
 Mitchell, K. J., 42
 Mitchell, R. L., 41
 Mittenzwei, H., 131
 Modlibowska, I., 245
 Moës, A., 214
 Moewus, F., 171, 172, 174, 175,
 185, 186, 188, 189, 190, 193
 Molho, D., 219
 Moore, C. V., 120, 126, 128
 Moore, E. J., 236
 Moore, R. F., 19
 Moore, W., 207
 Morel, F., 329
 Morel, G., 180, 236, 238, 240,
 285, 286, 287
 Morgan, E. J., 43
 Morris, H. D., 36
 Moss, V. D., 218
 Moulton, J. E., 218, 220
 Mueller, I. M., 250, 260
 Muggeridge, J., 207
 Muir, H. M., 120, 122, 128
 Muir, R. M., 170, 171, 173,
 178, 180, 189, 211
 Mukula, J., 216, 218
 Mulder, E. G., 1, 25, 32, 35,
 41, 42

Müller, A., 336
 Müller, D., 193, 194
 Mullins, L. J., 8, 16
 Muntz, J. A., 8, 25
 Murray, M. A., 213
 Myers, A. T., 4
 Myers, J., 55, 69, 76, 78,
 83, 96, 101

N

Nachmansohn, D., 326
 Nahinsky, P., 11
 Nance, J. F., 6, 11
 Nance, J. P., 146, 147, 150,
 163
 Nason, A., 38, 184
 Nasset, E. S., 334
 Naundorf, G., 188
 Neatby, K. W., 250, 251
 Needham, J., 280
 Neely, W. B., 213, 220
 Negelein, E., 130
 Neger, F. W., 304
 Neljubow, D., 315
 Nelson, J. M., 38, 39, 40
 Nelson, R. C., 264
 Neuberg, C., 333
 Neuberger, A., 120, 122, 125,
 126, 128
 Neuwiler, W., 329
 Newcomb, E. H., 156, 160,
 203, 239
 Newman, A. S., 218
 Newton, R., 254
 Nguyen-Van-Thoi, 307
 Nichol, M. A., 239
 Nicholas, D. J. D., 36
 Nicholas, R. E. H., 125
 Nickell, L. G., 232, 286
 Nickerson, W. J., 8, 40, 330,
 336
 Niel, C. B. van, see
 van Niel, C. B.
 Nier, A. O., 84
 Nieva, F. S., 173, 176, 180,
 181, 182, 183, 190
 Nilsson, H., 6
 Niskovskaya, E. K., 213
 Nitsch, J., 239
 Nitsch, J. P., 189
 Nö, R. L. de, see
 Lorente de Nö, R.
 Noack, K., 131, 294
 Nobécourt, P., 231, 233, 235,
 236, 238, 239, 284
 Noble, W. M., 311, 312, 313,
 314
 Nocito, V., 28
 Noonan, T. R., 120
 Norem, W. L., 207, 208
 Norman, A. G., 199, 200,
 203, 209, 210, 218
 Norris, T. H., 134
 Northen, H. T., 219, 258
 Noulard, L., 214
 Nutter, E. C., 209

Nygren, A., 214

O

Ochoa, S., 29, 30, 31, 95,
 104, 105
 Oestreicher, A., 131
 Offord, H. R., 218
 O'Gara, P. J., 296
 Ogston, A. G., 9, 12, 332
 O'Kane, D. E., 28
 Okanenko, A. S., 213
 Oliva, G., 169, 170, 173, 176
 Olsen, C., 8, 25
 Olsen, R. A., 159
 Olson, P. J., 215
 Ong, E. R. de, see
 de Ong, E. R.
 Oparin, A. I., 334
 Opie, E. L., 335
 Orchard, H. E., 214, 218
 Orsenigo, J. R., 209
 Ørskov, S. L., 331
 Osterhout, W. J. V., 335
 Ostrom, C. E., 253
 Osvald, H., 206, 214
 Ovcharov, K. E., 213, 218
 Overbeek, J. van, see
 van Overbeek, J.
 Overstreet, R., 1, 3, 5, 14,
 25
 Owens, O., 126
 Owens, O. H., 135

P

Paats, 310
 Paatela, J., 216
 Pallade, G. E., 11, 16
 Pappenheimer, A. M., Jr.,
 126
 Parker, M. W., 191, 193
 Parpart, A. K., 334
 Paul, K. G., 130
 Pavlychenko, T. K., 214
 Pearse, H. L., 214
 Pedersen, A., 214
 Peiss, C. N., 203
 Pelece, E., 238
 Penfound, W. T., 212, 219
 Perkins, M. E., 31
 Peters, C. A., 6, 44
 Petersen, H. I., 214
 Peto, H. B., 250, 251
 Peyronel, B., 173
 Philipson, W. R., 271
 Phillips, J. N., 205
 Phillips, J. W., 146, 163
 Phillips, P. H., 332
 Phillips, W. M., 215
 Phillips-Nance, J. W., see
 Nance, J. P.
 Piacco, R., 215
 Piccione, F. V., 209
 Pickett, M. J., 203
 Pierre, W. H., 36
 Pilkington, M., 276

Pinsent, J., 43
 Pirson, A., 109
 Pisek, A., 248, 257
 Plant, W., 42, 43
 Plantefol, L., 235, 239
 Plass, M., 29, 30, 32, 46
 Platenius, H., 148, 149, 150
 Platt, A. W., 250, 251
 Plaut, G. W. E., 30
 Podesva, J., 189
 Polglase, W. J., 45
 Ponder, E., 329, 332, 336
 Ponticorvo, L., 122
 Popoff, A., 185
 Potter, G. F., 247
 Powers, W. H., 39
 Pratt, C., 187, 281
 Priestley, J. H., 286
 Pringsheim, P., 61, 78, 80
 Proctor, N. K., 329
 Provasoli, L., 40, 137, 333
 Prunty, F. I. G., 125
 Puck, T. T., 55, 56, 69
 Purvis, O. N., 235, 239

Q

Quimba, G. P., 220
 Quisenberry, K. S., 245

R

Raadts, E., 180
 Rabideau, G. S., 5, 236, 239
 Rabinowitch, E., 59, 87, 88,
 99
 Racker, E., 335
 Radeloff, H., 303, 304
 Radin, N. S., 122
 Rakitin, Y. V., 213
 Raleigh, S. M., 220
 Randolph, L. F., 239
 Ranson, S. L., 148, 152, 153,
 155, 166
 Raoul, Y., 238
 Ratner, S., 335
 Ratsek, J. C., 310
 Raub, A., 183
 Ravault, L., 219
 Ravazzoni, C., 213
 Rawlinson, W. A., 126, 130
 Read, R. A., 210
 Redemann, C. T., 202
 Reed, E. A., 330
 Reed, G. B., 93
 Reed, H. S., 37, 233
 Rees, E. W., 219
 Rees, W. J., 4, 10
 Reeve, R. M., 271
 Rehm, S., 250, 259
 Reiber, H. G., 207, 208
 Remmert, L. R., 302, 304,
 305, 306, 309
 Reuss, C., 293
 Reuther, W., 4
 Reynolds, D. S., 302
 Rhoads, C. P., 124

- Rhodes, A., 19, 213, 214
 Rice, E. L., 211
 Rich, A., 336
 Richards, A. G., 330
 Richards, F. J., 279
 Richter, G. H., 205
 Rickes, E. L., 40
 Ricks, M., 330
 Rieke, F. F., 84, 112
 Rietsema, J., 174
 Rij, N. J. W. van, see van
 Rij, N. J. W.
 Riker, A. J., 191, 214, 232,
 234, 235, 237, 239, 286
 Rimington, C., 119, 124, 125,
 126
 Rittenberg, D., 119, 120,
 122, 128
 Roach, W. A., 46
 Robbins, W. J., 231, 232,
 234, 235, 236, 237, 239
 Robbins, W. R., 303, 304, 308
 Roberts, E. A. H., 39
 Roberts, H. A., 201, 205,
 206, 216
 Roberts, I. S., 333
 Roberts, I. Z., 8, 13, 330, 333
 Roberts, R. B., 8, 13, 330,
 333
 Robertson, R. N., 1, 3, 10,
 11, 12, 15, 16, 159
 Robinson, B. J., 232, 234
 Robinson, R. G., 216
 Roborgh, J. R., 176, 178
 Roche, J., 307
 Rockwood, E. W., 307
 Roger, M., 307
 Rogers, W. S., 245, 246, 334
 Rohrbaugh, L. M., 211
 Roland, M., 220
 Rolinson, G. N., 37
 Romell, L. G., 302, 305
 Ropp, R. S. de, see de Ropp,
 R. S.
 Rosa, R. D., 135
 Rosenberg, A. J., 33, 36,
 130
 Rosenberg, J. L., 91, 92, 93,
 96, 98, 100, 101, 102, 103,
 104, 105
 Rosenberg, T., 331
 Rosenthal, T. B., 329
 Rossman, E. C., 215
 Rothenberg, M. A., 327, 333
 Rothstein, A., 8, 335, 336
 Rottenberg, W., 251, 252,
 254
 Roux, R. M., 31
 Rowley, R. J., 305
 Ruben, S., 11, 28, 91, 134
 Ruben, S. W., 53
 Rudra, M. N., 29
 Ruge, U., 179
 Ruger, M. L., 40
 Ruhland, W., 266
 Rummel, W., 330
 Rybak, B., 239
 Ryker, T. C., 206, 210, 215
 Ryland, A. G., 214
- S
- Sachanen, A. N., 209
 Sacks, J., 5, 335, 336
 Saifi, A. F. E., 147
 Salles, J. B. V., see Veiga-
 Salles, J. B.
 Salomon, K., 120, 135
 Sanders, M. E., 286
 Sapper, I., 259
 Saret, H. P., 183
 Satina, S., 237
 Sato, R., 33
 Savage, E. F., 210
 Scarborough, E. N., 206
 Scarisbrick, R., 33, 53, 72,
 129
 Scarponi, F., 216
 Scarth, G. W., 245, 246, 248,
 255, 259, 263, 264, 266
 Schade, A. L., 33
 Schales, O., 28, 31
 Schales, S. S., 28
 Schalucha, B., 172, 178, 185
 Schatz, A., 40, 137, 333
 Scheibmair, G., 261, 264
 Schimke, O., 31
 Schmidt, G., 331, 336
 Schmidt, H., 250, 253, 254,
 255, 256, 259
 Schmidt, M. B., 234, 235,
 237
 Schmitt, F. O., 333
 Schneider, A., 147
 Schneider, E., 278
 Schneider, W. C., 11, 16
 Schocken, V., 170, 171
 Schoene, D. L., 220
 Schopfer, W. H., 287
 Schoute, J. C., 279
 Schrank, A. R., 193
 Schrenk, H. H., 293
 Schröder, J. v., 293
 Schliepp, O., 278, 280
 Schwalm, H. W., 311, 312
 Schwartz, D., 135, 136
 Schwartz, S., 124, 125
 Schwendiman, A., 206
 Scott, D. H., 245, 246
 Scott, G. T., 8
 Seaman, G. R., 330
 Seemann, F., 334
 Seifter, J., 330
 Selts, I. F., 160
 Selkurt, E. E., 334
 Sell, H. M., 202, 212, 213,
 220
 Seshagiri, P. V. V., 153
 Setterstrom, C., 300, 301,
 309, 310
 Sexton, W. A., 169, 184, 211,
 216, 219, 220
 Seyler, F. H., see Hoppe-
 Seyler, F.
 Shadbolt, C. A., 217
 Shafer, N. E., 220
 Shapiro, B., 31
 Shapiro, H., 335
 Shapiro, S., 332
 Sharp, A. G., 124
 Shaw, W. C., 220
 Shear, C. B., 4
 Shemin, D., 119, 120, 121,
 122, 123, 128
 Shenk, W. D., 328
 Shepardson, W. B., 6, 44
 Sherman, G. D., 29
 Sherwood, L. V., 209
 Shiau, Y. G., 55, 56, 64, 79
 Shiftan, S. L., 245
 Shirlow, N. S., 42
 Shive, J. W., 34, 35
 Shocken, V., 88
 Shull, C. A., 315, 316
 Sibbitt, L. D., 213
 Sibly, P. M., 8, 37
 Sideris, C. P., 7, 35
 Siedel, W., 123, 127, 129
 Siminovich, D., 248, 249,
 256, 259, 264, 266
 Simon, E. W., 200, 202
 Sinclair, W. B., 317
 Singh, N., 153
 Singh, S., 213
 Siu, R., 234, 237, 239, 271
 Sivor, E. M., 169
 Skoog, F., 38, 169, 170, 171,
 173, 174, 175, 180, 183,
 184, 188, 190, 232, 234,
 273
 Skow, R. K., 77, 78, 83
 Slade, R. E., 216, 220
 Slankis, V., 236, 238, 239
 Slattery, M. C., 4, 25, 26
 Slife, F. W., 217
 Slifer, E. H., 330
 Slonim, B., 45
 Smit, A. J. H., see Haagen-
 Smit, A. J.
 Smith, A. E., 220
 Smith, E. L., 45
 Smith, J. H. C., 131, 132,
 133, 134, 135, 136, 140
 Smith, O., 209, 211, 217, 218,
 220
 Smith, P. F., 4
 Smith, T. J., 248
 Smith, W., 126
 Snow, M., 276, 278, 280
 Snow, R., 276, 278, 280
 Snyder, W. E., 220
 Söding, H., 171, 172, 173, 174,
 178, 180, 185, 186
 Sollner, K., 336
 Somers, I. L., 34, 35
 Sorauer, P., 293
 Specht, A. W., 4, 18
 Speck, J. F., 26, 29, 30, 31,
 32
 Spencer, D., 44
 Spiegelman, S., 204, 325, 335

Spikes, J. D., 109
 Sponer, H., 58
 Sprague, G. F., 215
 Sreenivasan, A., 39, 218
 Stahler, L. M., 202
 Stanforth, D. W., 213, 215
 Staudenmayer, T., 205
 Stauffer, J. F., 28, 239
 Steeman, N. E., 38
 Stehsel, M. L., 180, 183
 Stein, M. W., 26, 46
 Steinbach, H. B., 326, 331
 Steinberg, R. A., 25, 42
 Steinberger, R., 99
 Steinmetz, E., 193
 Stellwaag, F., 205
 Stenlid, G., 11, 203, 204
 Stepka, W., 28, 91, 92
 Sterling, C. R., 210, 221
 Stern, A., 53
 Stern, J. R., 31, 324, 334
 Steward, F. C., 9, 11, 12, 89,
 147, 237, 285, 298
 Stewart, D. R., 334
 Stewart, W. S., 174
 Stickland, L., 45
 Stiffel, C., 330
 Stiles, W., 153
 Still, J. L., 16, 30
 Stock, C. C., 31
 Stocker, O., 250, 251, 254,
 255, 256, 257, 259, 266
 Stoeckeler, J. H., 209
 Stoklasa, J., 293, 294
 Stoll, A., 53, 131
 Stone, D., 332
 Stots, E., 39
 Stout, G. L., 309
 Stout, P. R., 1, 3, 25, 45
 Straib, W., 245, 247
 Strain, H. H., 128, 134, 135
 Stratmann, C. J., 8
 Straub, F. B., 328
 Street, H. E., 6, 12, 147, 232,
 233, 234, 239, 240
 Strehler, B. L., 101
 Strittmatter, C. F., 204
 Stromme, E. R., 213
 Stumpf, P. K., 32
 Subrahmanyam, V., 45
 Suds, R. H., 247
 Sutter, E., 11
 Sveinsson, S. L., 125
 Swain, R. E., 293, 296, 299,
 300
 Swanson, C. P., 213
 Swedin, B., 36
 Sweeney, B. M., 159

T

Tabentskii, D. A., 213
 Tabori, E. W., see Weisz-
 Tabori, E.
 Taggart, J. V., 204, 334
 Talley, P. J., 209
 Tamiya, H., 74, 75, 76

Tang, Y. W., 33, 180, 182,
 190, 191, 192
 Taso, D. P. N., 212
 Tattersfield, F., 205
 Taylor, B. M., 212
 Taylor, D. L., 149, 153, 154
 Taylor, E. S., 205
 Telle, J., 236
 Teller, E., 61
 Templeman, W. G., 19, 213,
 214, 215, 216, 217, 219, 220
 Teorell, T., 323, 327, 336
 Teply, L. J., 12, 16, 159, 204
 Terner, C., 329, 332
 Terranova, R., 209
 Terroine, T., 183, 184
 Thannhauser, S. J., 331, 336
 Theorell, H., 36, 129
 Thielman, M. J. T., 234, 238
 Thimann, K. V., 40, 159, 169,
 170, 171, 173, 180, 181,
 185, 186, 188, 218, 273,
 281, 287
 Thoai, N. V. see Nguyen-
 Van-Thoai
 Thoday, D., 334
 Thomas, J., 148, 149
 Thomas, J. B., 176, 178
 Thomas, K. M., 218
 Thomas, M., 145, 146, 147,
 148, 152, 154, 156, 161
 Thomas, M. D., 44, 296, 297,
 298, 300, 303, 305, 307,
 308, 309, 310, 317
 Thomas, M. P., 42
 Thompson, C. R., 219
 Thompson, D. G., 214
 Thompson, J. F., 89, 298
 Thorne, D. W., 34
 Thornton, N. C., 309, 310
 Thorup, S., 214
 Thruston, M. N., 19, 213
 Timmons, F. L., 206
 Tincker, M. A. H., 217
 Tfo, M. A., 176, 177
 Tischler, N., 220
 Tisdale, W. B., 18
 Tissières, A., 39
 Tobias, J. M., 328
 Todd, C. M., 125
 Todd, G. W., 254
 Toit, R. du, see du Toit, R.
 Tolbert, N. E., 95
 Tolliday, J. D., 328, 336
 Toole, E. H., 216
 Toole, V. K., 216
 Topol, L., 332
 Torrie, J. H., 206
 Totic, J., 41
 Toth, S. J., 4
 Tottingham, W. E., 184
 Treccani, C. P., 213
 Trelease, H. M., 233
 Trelease, S. F., 233
 Treumann, W. B., 213
 Trim, A. R., 334
 Tsui, C., 37, 38, 178, 180,

184, 232, 234
 Tukey, H. B., 235, 239, 271
 Tullis, E. C., 211
 Tung, S. M., 173, 174, 189
 Turner, J. S., 145, 148, 153,
 154
 Turrell, F. M., 317
 Tuttle, L. C., 99

U

Ullrich, H., 245, 246
 Ulrich, A., 4, 25
 Umbreit, W. W., 28, 137, 183
 Uspenskaia, W. J., 231
 Uspenski, E. E., 231
 Ussing, H. H., 1, 324, 326,
 327, 328, 331
 Utter, M. F., 26

V

Väärtnöu, H., 214, 216
 Vahtras, K., 3
 Valle, O., 216
 Vallmitjana, L., 188
 Van Andel, O. M., 8
 van der Veen, R., 79, 80, 83,
 84
 van Iterson, G., 280
 Van Nie, R., 17
 van Niel, C. B., 53, 54, 87,
 140
 Van Norman, R. W., 84, 91
 van Overbeek, J., 17, 169,
 170, 173, 176, 177, 181,
 186, 189, 234, 237, 238,
 271, 285
 van Rij, N. J. W., 40
 Vanselow, A. P., 42
 Van-Troostwyck, 310
 Varner, J. E., 94
 Vázquez, E. S. de, see de
 Vázquez, E. M.
 Veen, R. van der, see van
 der Veen, R.
 Veiga-Salles, J. B., 29, 30
 Veldstra, H., 182, 211
 Vennesland, B., 28, 29, 30,
 32, 111
 Verkaaik, B., 176, 177, 178
 Vernon, L., 91, 92, 93, 95,
 102, 103
 Vestin, R., 30
 Viehmeyer, G., 216
 Villee, C. A., 336
 Vincent, J. M., 205
 Virtanen, A. I., 128
 Vittorini, P., 93
 von Barges, J., 218
 von Euler, H., see Euler,
 H. v.
 von Guttenberg, H., see
 Guttenberg, H. v.
 von Schröder, J., see
 Schröder, J. v.
 von Witsch, H., see

Witsch, H. v.
Vosburgh, G. J., 329, 334
Voss, H., 171

W

- Wadleigh, C. H., 1, 4, 10, 326
Wagenknecht, A. C., 190, 191, 192
Wain, R. L., 211
Waksman, S. A., 37
Wallace, A., 4, 25, 34
Wallace, T., 7, 25
Wallihan, E. F., 7
Walrand, M. B., see
Bouillenne-Walrand, M.
Walter, E. E., 209
Walter, E. M., 40
Walter, H., 246
Walters, C. P., 204
Wandrek, S. D., 39
Wang, F. H., 236
Wang, J. C., 329
Wanner, H., 10
Warburg, O., 53, 56, 58, 67, 76, 79, 82, 88, 100, 109, 112, 118, 130, 156, 158, 307
Wardlaw, C. W., 272, 273, 274, 275, 277, 278, 279, 280, 282, 283
Waring, W. S., 33, 42, 43, 44, 48
Warrington, K., 44
Warmke, G. L., 173, 181, 182, 188
Warmke, H. E., 173, 181, 182, 188
Warren, G. F., 206
Wartiovaara, V., 14
Wassink, E. C., 54, 55, 56, 62, 64, 67, 70, 71
Watson, C. J., 124, 125, 126, 128
Watson, D. J., 163
Watson, W. F., 60, 62
Waygood, E. R., 32, 38, 40, 43, 110, 158
Wayrynen, R. E., 109
Weatherby, J. H., 336
Weaver, J. E., 250, 260
Weaver, R. J., 218
Webb, E. C., 26
Webb, M., 27, 40
Weber, R. P., 180, 193
Weeks, D. C., 11, 12, 16, 159
Weevers, T., 169
Weibel, R. O., 245
Weigl, J. W., 84, 91, 96, 102
Weinberger, J., 210
Weintraub, R. L., 199, 200, 201, 209, 210, 211
Weiss, J., 59, 76
Weiss, P., 270
Weisz-Tabori, E., 31
Weller, L. E., 212
Weller, S., 75
Wells, A. E., 296
Went, F. W., 175, 176, 181, 193, 210
Werkman, C. H., 26, 27, 30, 33, 46
Werle, E., 183
Wesson, L. G., 327
West, R., 128
Westheimer, F. H., 99
Wetmore, R. H., 180, 187, 281, 285, 286, 287
Wetzel, K., 147, 148
Wexler, H., 293
Whaley, W. G., 5, 236, 239
Whatley, F. R., 26, 99, 108, 109
White, E. P., 183
White, P. R., 190, 231, 232, 233, 234, 235, 237, 239, 284
White, R. O., 178
White, V. B., 232, 239
Whiteside, A. G. O., 253, 255, 259, 264
Whiteway, S. G., 336
Whiting, A. G., 213
Whiting, G. C., 147, 152, 153, 154
Whitman, W. C., 254
Wiede, W., 214
Wiedemann, E., 131
Wieler, A., 293
Wiersum, L. K., 17
Wiklander, L., 4
Wikoff, H. M., 126, 128
Wilbrandt, W., 335
Wilbur, K. M., 6
Wilcoxon, F., 317
Wilde, W. S., 329
Wildman, S. G., 5, 33, 40, 170, 171, 173, 175, 176, 177, 179, 180, 182, 183, 185, 186, 193
Wilhelmi, G., 109
Wilkins, M. J., 10, 12, 15, 16, 159
Willard, C. J., 217, 220
Williams, A. H., 32, 42, 44
Williams, E. G., 3
Williams, R. J. P., 34
Willis, A. J., 6
Willstätter, R., 53, 115
Wilske, C., 201
Wilson, D. L., 330
Wilson, E. H., 209
Wilson, G., 239
Wilson, L. B., 307
Wilson, R. D., 41, 42, 43, 44
Winkler, F., 123
Wirwille, J. W., 221
Wislicenus, H., 293, 294, 306, 314
Witsch, H. v., 187
Wittenberg, J., 121, 123
Wittwer, S. H., 174, 189, 202
Wohl, K., 73
Wolf, D. E., 209, 221
Wolff, C. T., 271
Wood, H., 94, 105
Wood, J. G., 8, 37
Wood, J. W., 211
Wood, R. W., 55
Wood, T. R., 40
Wood, W. A., 28, 183
Woodford, E. K., 17, 201, 202, 206
Woods, D. D., 99
Woods, E. F., 328, 336
Woods, M. W., 11, 16
Work, E., 204
Work, T. S., 204
Wort, D. J., 212
Worzella, W. W., 245, 247
Wright, J. O., 215, 217, 219
Wright, R. D., 8
Wurgler, W., 211, 213, 214
Wyssling, A. F., see
Frey-Wyssling, A.
Y
Yakushkina, N. I., 212
Yanofsky, C., 183
Yastrebov, M. T., 15
Yeatman, J. W., 211
Yocum, C. S., 112
Young, D. W., 218
Young, H. Y., 7, 35
Young, P. A., 208
Young, R. E., 148, 153
Young, V. A., 218
Youngken, H. W., Jr., 212
Yurkevich, V. V., 334
Z
Zacco, M., 330
Zahnley, J. W., 210
Zaitlin, M., 311, 312, 313, 314
Zehngraff, P., 218
Zeplin, M. T., 332
Zerahn, K., 8, 40, 330
Ziegler, J. A., 25
Zierler, K. L., 219
Zimmerman, P. W., 169, 170, 175, 177, 213, 217, 218, 300, 301, 308, 310, 311, 315, 316
Zimmerman, W. A., 281
Zippellus, O., 27
Zukel, J. W., 220

SUBJECT INDEX

A

- Absorption
 - mechanism of, and transport of inorganic nutrients, 1-20
 - and transport
 - diffusion and, 2-3
 - terminology of, 1-2
- Accumulation, 9-17
 - carrier system and, 13-14
 - cell energy and, 9
 - driving force and, 9-10
- Acetaldehyde
 - glycolysis and, 157
 - oxidation of, 158
 - production of, fermentation and, 148
- Acetate, protoporphyrin synthesis and, 122, 123, 139
- Acetylcholine, cell potassium, 327, 330
- Adenosine phosphates
 - dinitrophenol and, 159
 - energy transfer and, 27, 28
 - oxidation of, 159
 - glycolysis rate and, 159
 - Pasteur effect and, 159, 160
- Aerosols
 - plant injury by, 314, 415
 - smog and, 314
- Alcohol, production of, fermentation and, 146-48, 157
- Algae, photoreduction by, 105-6
- Aluminum
 - organic complexes with, 5
 - phosphate metabolism and, 7
- American Smelting and Refining Co. studies, gas damage and, 296-99
- Amino acids
 - apical meristems and, 286
 - auxin formation and, 180
 - metabolism of
 - manganese and, 32
 - phosphorylation and, 28
 - nitrogen and carbon source, 237
 - potassium deficiency and, 25
 - synthesis of, 6
 - manganese and, 6
 - tissue content of, herbicides and, 212
 - tissue culture and, 286
 - transamination and, 237
- Ammonia gas, plant damage

- by, 310
- Ammonium, nitrogen metabolism and, 6
- Anabolism, oxidative
 - nitrophenols and, 204
 - Pasteur effect and, 160-67
 - products of, 161
- Anthocyanins
 - copper and, 40
 - molybdenum and, 44
- Anticholinesterase
 - cell potassium and, 330
 - nerve conduction, 326
 - nerve ion exchange and, 327
- Apical meristems
 - development of, 271-89
 - in vitro cultures of, 284-89
 - leaf primordia and, 277-84
 - morphogenesis on, experimental, 269-89
 - protein synthesis in, 286
 - surgical treatment of, 271-77
 - tissue culture of, 284-89
- Arable crops, weed control of, 214-16
- Arginase, ions and activity of, 31
- Arginine, auxin action and, 174
- Ascorbic acid
 - auxin formation and, 180
 - coenzyme I and, 158
 - content of, manganese and, 29
 - formation of, molybdenum and, 43, 44
 - oxidative processes and, 38, 40
 - copper and, 39
 - photosynthesis and, 111
- Auxins
 - apical meristems and, 271, 287
 - auxin a and b, 177, 178, 185
 - chemical identity of, 175-79
 - colchicine and, 238
 - destruction of, oxidases and, 33
 - development and, 184-90
 - enzymatic formation of, 180, 182
 - enzymatic release of, 170, 171
 - ethylene and, 193
 - formation rate of, 188
 - forms of, 169, 186
 - inactivation of, 190-94
 - indoleacetic acid and, 176-78

- inhibitor-auxin complex, 171-73
- inhibitors of, 173, 174
- precursors, 169-75, 186, 187
- production of, 238
- zinc and, 38
- root growth and, 188
- tissue culture and, 238, 239, 285, 287, 288
- transport form of, 185
- tumor growth and, 239
- see also Indoleacetic acid
- Azide
 - Pasteur effect and, 156, 157
 - respiration and, 11

B

- Bacteria, purple, metabolism of, 106, 107
- Barbiturates, plant growth and, 239
- Bile pigments
 - biosynthesis of, 127-29
 - in plant tissues, 128
- Biosynthesis, of chlorophyll and related pigments, 115-41
- Boron
 - deficiency of, indoleacetic acid and, 184
 - drought resistance and, 253
 - plant nutrition and, 36, 37
 - tissue culture and, 233
 - toxicity of, 37
- Boyce Thompson Institute
 - study, gas damage and, 301-2
- Buds
 - auxin in, 186
 - development of, 272, 273, 277-84
 - transport and, 19

C

- Caffeine, tissue culture and, 238
- Calcium
 - absorption of, 3, 18
 - cell exchange of, 325, 326
 - drought resistance and, 256, 258
 - heat resistance and, 264
 - hemolysis and, 330
 - in leaves, 5
 - nerve exchange of, 327
 - phosphates and, 26
 - in roots, 4
 - transport of, 19

- Cambium
 auxin in, 187
 tissue culture of, 238
 Capillaries
 permeability of, 329
 anoxia and, 330
 Carbohydrate metabolism
 ion accumulation and, 13
 nitrogen uptake and, 6
 phosphate uptake and, 6
 phosphorylation and, 28, 27
 photosynthesis and, 91-96,
 104
 see also Glycolysis; Res-
 piration; and Ferment-
 ation
 Carbohydrates
 tissue content of, frost
 resistance and, 247, 248
 tissue culture and, 234, 235
 uranium and, 8
 2-Carbon acceptor, hypo-
 thetical, and photosyn-
 thesis, 101-5
 Carbon dioxide
 assimilation of
 cold and, 246, 247
 fluorine and, 307
 sulfur dioxide and, 298
 fixation of, manganese and,
 30
 photosynthesis and, 68,
 77-79, 81-83
 production of
 fermentation and, 147
 respiration and, 147
 reduction of, 107
 uptake in photosynthesis,
 90, 92, 96, 98-100
 Carbon isotope studies of
 photosynthesis, 90, 91
 Carbon monoxide
 Pasteur effect and, 156, 157
 plant damage by, 316
 Carbonic anhydrase
 distribution in plants, 110
 photosynthesis and, 110
 zinc and, 37
 Catalase, photosynthesis
 and, 110
 Cell division, nitrophenols
 and, 204
 Cell membranes, see Mem-
 branes, cells of
 Cell walls, herbicides and,
 212
 Cellulose, tissue content of,
 herbicides and, 212
 Chelating agents, iron
 binding and, 333
 Chloride
 chemical determination of,
 328
 photosynthesis and, 109
 tissue exchange of, 326, 330
 in tissues, 329
 Chlorine, photosynthesis
 and, 26
 Chlorine gas, plant damage
 by, 309
 Chlorophyll
 activation of, magnesium
 and, 60, 63
 chemiluminescence of, 101
 chlorophyll a, 135, 136
 chlorophyll b, 135, 136
 chlorophyll c, 134, 135
 conditions affecting, 59-60
 energy migration in, 61, 62
 fluorescence of, 54-71, 73,
 78
 metastable state and,
 57-58
 in photosynthesis, 54-56
 self-quenching of, in vitro,
 62-63
 formation of, without light,
 133
 hydrogen transfer by, 76
 oxidation sensitization by,
 58
 photosynthetic unit, 73-75
 and related pigments, bio-
 synthesis of, 115-41
 reversible bleaching of, 59
 streptomycin on, 136-37
 sulfur dioxide injury and,
 294
 synthesis of
 copper and, 40
 evolution of, 139, 140
 iron compounds and, 34
 magnesium and, 26
 manganese and, 7
 potassium and, 25
 see also Chlorosis; and
 Photosynthesis
 Chloroplasts
 photosynthesis and, 107-13
 enzymes and, 110
 hydrogen transport and,
 111, 112
 ion effects on, 109, 110
 streptomycin and, 137
 Chlorosis
 iron deficiency and, 35, 43
 manganese and, 35
 molybdenum and, 43
 potassium deficiency and,
 25
 Citric acid cycle
 iron and, 35, 36
 magnesium and, 27, 29, 30,
 46
 manganese and, 29-32, 35
 phosphorylation and, 28
 photosynthesis and, 69
 Cobalt
 arginase activity and, 31
 decarboxylation and, 29, 30
 iron deficiency from, 40
 organic complexes with, 5
 plant nutrition and, 40, 41
 sulfhydryl compounds and,
 40
 uptake of, 8
 vitamin B₁₂ and, 40
 Coenzyme I
 oxidation of, 158
 Pasteur effect and, 157-59
 Colchicine, auxin and, 238
 Cold injury
 freezing rate and, 245, 246
 frost resistance and, 247-50
 Coleoptiles
 auxin in, 185
 indoleacetate oxidation and,
 191
 Copper
 anthocyanin formation and,
 40
 chlorophyll synthesis and,
 40
 enzyme activity and, 38-40
 laccase and, 39
 in leaves, 5
 organic complexes with, 5
 photosynthesis and, 40
 plant nutrition and, 38-40
 respiration and, 39
 tissue culture and, 233
 Cotyledons, auxin and, 187,
 188
 Coumarin, auxin inhibition
 by, 175
 Cyanate, potassium, herbi-
 cidal effects of, 209
 Cyanide
 free auxin and, 170
 hydrogen, damage by,
 316, 317
 ion exchange and, 328
 Pasteur effect and, 155-57
 photosynthesis and, 71, 81,
 99
 respiration and, 11
 Cysteine, cobalt effects and,
 40
 Cytochrome oxidase
 ion effects on, 11
 in leaves, 130
 Cytochrome system
 coenzyme I and, 158
 formation of, copper and,
 40
 ion transport and, 10, 15, 16
 location of, 16
 in plant tissues, 32, 33
 Cytoplasm, structure of
 ion accumulation and, 14-17
 mitochondria and, 16

 D
 Damage, gas, see Gas damage
 Dark fixation, of carbon
 dioxide
 after illumination, 96-99
 photosynthesis and, 96-101
 poisons and, 99-100
 Dehydrogenases, nitrophenols

and, 204
 Dessication resistance
 drought resistance versus,
 250-51
 measurement of, 251-53
 see also Drought resistance
 Development, see Morpho-
 genesis
 Dextrins, tissue content of,
 herbicides and, 212
 Diamylacetic acid, root
 inhibition by, 6
 Diaphorase, coenzyme I
 and, 158
 Diatoms, photosynthesis in,
 64-67, 69, 70, 72
 2,4-Dichlorophenoxyacetic
 acid (2,4-D)
 animal toxicity of, 218, 219
 biochemical effects of,
 212, 213
 crop yield and, 214
 growth and, 175, 210-19
 indoleacetate oxidation
 and, 192
 ion transfer and, 12
 penetration of, 211
 persistence in soil, 218
 photosynthesis and, 213
 phytotoxicity of, 210-14
 respiration and, 191, 212
 tissue culture and, 237
 translocation of, 211
 Diffusion, absorption and,
 2-3
 Dinitro-alkyl-phenols
 cell proteins and, 205
 chemical structure in,
 toxicity of, 205
 growth and, 204
 herbicidal effects of,
 203-6, 209
 insecticidal effects of, 205
 metabolic effects of, 203-5
 Dinitrophenol
 energy rich phosphates
 and, 12
 ion accumulation and, 12
 mitochondria and, 16
 Pasteur effect and, 156
 phosphorylation and, 159
 Dipyriddy, root respiration
 and, 11
 Donnan equilibrium, 2, 3-4
 Dormancy
 auxin and, 186
 growth inhibitors and, 186
 Drought resistance, 250-59,
 264-66
 age and, 251
 boron and, 253
 definition of, 250, 251
 dessication resistance
 versus, 250, 251
 determination of, 250
 growth inhibition and, 253
 naphthaleneacetic acid

and, 253
 osmotic pressure and, 253,
 254
 protoplasm and, 252, 253
 protoplasmic factors and,
 255-59
 theory of, 256-59, 265, 266
 types of, 250, 251
 water content and, 254-59

E

Electrolytes, see Minerals
 Embryos
 auxin in, 189
 development of, 271
 tissue culture of, 239
 Endosperm
 auxin accumulation by, 185
 cocoanut "milk" and, 237
 growth nutrient source, 237
 Enzymes
 adaptative, nitrophenols
 and, 204
 ionic activation of, 45-47
 phenoxycetates and, 213
 "total metal effect" on,
 46, 47
 Epinephrine, ion exchange
 and, 328
 Ethylene
 auxin inactivation by, 193
 damage by, 315, 316
 determination of, 194
 Etiolation
 auxin and, 193
 radiation and, 193

F

Fatty acids, cell penetration
 by, 334
 Fermentation
 definition of, 146
 metabolic inhibitors and,
 155-56
 nitrophenols and, 203, 204
 oxygen concentration and,
 148, 149, 151, 154, 157,
 164-66
 phosphorylation and, 159,
 160
 products of, 146-48, 152,
 153
 rate of, 148
 types of, 146, 147
 see also Pasteur effect
 Fertilization, water distri-
 bution and, 335
 Fertilizers, frost resistance
 and, 247
 Fluorescence
 photosynthesis and, 55-71,
 73, 78
 see also Chlorophyll,
 fluorescence of
 Fluorine compounds

air content of, 307
 damage by, 302-9
 emission of, by plants,
 308, 309
 enzyme activity and, 307
 photosynthesis and, 307
 soil content of, 307, 308
 toxic mechanism of, 307
 toxicity to animals, 302
 see also Gas damage,
 fluorine compounds; and
 specific compounds
 Folic acid, see Vitamin B₁₂
 Frost resistance, 245-50,
 264-66
 carbohydrate content and,
 247, 248
 environmental factors in,
 247
 fertilizers and, 247
 injury, 245
 measurement and control
 of, 245
 metabolism and, 246, 247
 morphological factors in,
 247
 photoperiod and, 247
 plasmolysis and, 249, 250
 proteins and, 249
 theory of, 265, 266
 water content and, 248
 Fructose, metabolism by
 yeast, 163
 Fruits, auxin and, 189, 190

G

Gas damage, 293-318
 American Smelting and
 Refining Co. studies on,
 296-99
 ammonia, 310
 Boyce Thompson Institute
 study on, 301-2
 carbon monoxide, 316
 chlorine, 309
 ethylene, 315
 fluorine compounds, 302-9
 atmospheric analyses of,
 307
 evolution from plants,
 308-9
 fumigation experiments
 and, 306-7
 toxicity mechanism of,
 307
 uptake from soil of, 307-8
 hydrogen chloride, 309
 hydrogen cyanide, 316, 317
 hydrogen sulfide, 317
 iodine, 309
 mechanism of, 317, 318
 mercury vapor, 310, 311
 nitrogen oxides, 310
 Selby report on, 295-96
 smog, 311-15
 sulfur compounds, 315-17

sulfur dioxide, 293-302
 Trail investigation on, 299-301
 Genes, chlorophyll synthesis and, 118, 139, 140
 Genetics
 cytoplasmic inheritance, chloroplasts and, 137
 frost resistance and, 247
 Germination, auxin freeing in, 185
 Glucose, utilization by yeast, 161-63
 Glutamine
 formation of, 28
 tissue culture and, 286
 Glutathione, copper complex with, 39
 Glycine, protoporphyrin synthesis and, 119-23, 126, 139
 Glycolic acid, photosynthesis and, 95
 Glycolysis
 anabolism and, 161
 coenzyme I and, 157-59
 definition of, 145
 oxygen concentration and, 157
 see also Pasteur effect
 Grasses, heat resistance of, 260
 Grassland, weed control of, 216
 Growth
 hormones, see Auxins
 nitrophenols and, 204
 phenoxycetates and, 213
 regulators
 synthetic, 220-21
 see also Growth substances
 see also Morphogenesis
 Growth substances, 269-94
 biological tests for, 174, 175
 chemical identity of, 175-79
 cocoanut milk and, 285
 development and, 184-90
 formation of, 179-84
 indoleacetaldehyde conversion, 181-82
 indoleacetaldehyde formation from precursors, 182-84
 inactivation of, 190-94
 inhibitors of, 173-74, 186, 188
 drought resistance and, 253
 mineral nutrition and, 179-84
 neutral growth substance, 173, 181, 182
 occurrence of, 169-94
 occurrence of regulators and, 184-90

potassium content and, 19
 respiration and, 191
 toxic actions of, 210-19
 tryptophane conversion, 180-81
 see also Auxins; Indoleacetic acid; and specific compounds
 Gynophores, calcium uptake and, 18

H

Heat resistance, 259-66
 factors affecting, 261, 262
 of grasses, 260
 ions and, 262-64
 measurement of, 259-61
 theory of, 262-64
 water content and, 261
 Hematin compounds, in cells, 33
 Heme
 bile pigment formation and, 128
 biosynthesis of, 129, 130
 photosynthesis and, 130
 Hemoglobin, in root nodules, 128
 Herbaceous species, weed control of, 217-18
 Herbicides, 199-210
 growth regulators as, 210-19
 see also individual compounds
 Hexoses, photosynthetic origin of, 92-95, 104
 Hill reagents, 107-9
 oxygen and, 110-11
 Histamine, hemolysis and, 330
 Horticultural crops, weed control of, 216
 Humidity, see Drought resistance
 Hyaluronidase, synovial membranes and, 330
 Hydrocarbons
 herbicidal effects of, 206-9
 phytotoxicity of, 208
 Hydrochloric acid gas, damage by, 309
 Hydrogen
 photoreduction and, 105, 106
 transfer of, chlorophyll and, 76
 Hydrogen fluoride, damage by, 302
 Hydrogen iodide, damage by, 309, 310
 Hydrogen ions
 concentration of, toxicity and, 202
 potassium accumulation and, 14

secretion of, 12
 tissue exchange of, 329
 transport of ions and, 14, 15
 Hydrogen sulfide, damage by, 317
 Hydrogen transporters, photosynthesis and, 111
 Hydroxylamine, photosynthesis and, 99

I

Indoleacetaldehyde
 growth and, 173
 intermediary in auxin formation, 181, 182
 neutral growth substance and, 181
 precursors of, 182, 183
 tuber development and, 186
 Indoleacetic acid
 apical development and, 280-82
 auxin relation to, 176-78
 compounds with, 169-70
 control of formation of, 193
 destruction of, 213
 enzymatic formation of, 180, 182
 growth promotion by, 175, 178
 oxidation of, 190-92
 photoinactivation of, 191-93
 respiration and, 191
 reversible inactivation of, 193
 tests for growth effect of, 174
 tissue culture and, 238
 tryptophane as precursor, 179-81
 see also Auxins
 Indolepyruvic acid, auxin formation and, 183
 Inositol, synthesis of, boron and, 36
 Insecticides
 hydrocarbons and, 207
 nitrophenols as, 205
 Iodine, damage by, 309, 210
 Ions
 accumulation of, 9-17
 binding of, chelating agents and, 333
 cell binding of, 333
 cell uptake of, 326
 chemical combination and, 5-9
 decarboxylation and, 30
 diffusion theory, 336
 enzyme activity and, 45-47
 heat resistance and, 262
 ion exchange, Donnan equilibrium and, 3-4
 tissue culture and, 231, 232

transport of, 1-20
see also Minerals

Iron
arginase activity and, 31
chlorophyll synthesis and,
25, 26, 34
citric acid cycle and, 35, 36
complex ion formation, 34
deficiency of, 34-36, 40,
43, 46
ferric-ferrous forms, 34
heavy metal relations, 34,
46
heme synthesis and, 129,
130
in leaves, 5, 7
nutrition and, 32-36
organic complexes with, 5
peptidase activity and, 31
peroxidase activity and,
36
photosynthesis and, 35, 110
porphyrin synthesis and,
126
porphyrin systems and,
32-34
protein combination with,
35
removal of, 11
tissue culture and, 233
transport of, 19
uptake of, 6, 7

Isopropyl phenylcarbamate
herbicidal effects of, 219,
220
physiological effects of,
219

Isotopes
permeability studied by,
324

K

Krebs cycle, see **Citric acid cycle**

L

Laccase, activity of
copper and, 39
manganese and, 39

Lactic acid, production of,
fermentation and,
147-48

Leaves
auxin and, 186, 187, 280-
82
chlorine injury of, 309
cytochrome in, 33
development of, 271-84
auxin and, 280-82
fluorine injury of, 303
herbicides and, 211, 212
iron in, 19
mineral content of, 4, 5
movements of, 187
phosphate uptake by, 6, 19

smog injury of, 312, 314
sulfur dioxide injury of,
293-94, 299
vascular system of, 272-75
zinc in, 8
see also **Chlorophyll**

Leukocytes, permeability of,
330

Light
auxin formation and, 188
chlorophyll formation and,
133, 136
heat resistance and, 261
ion accumulation and, 12
see also **Photosynthesis**

Lipids
membrane behavior of, 2, 3

M

Magnesium
cell division and, 27
chlorophyll and, 26
activation of, 60, 63
synthesis of, 130, 131,
135, 136
citric acid cycle and, 27,
29, 30
enzyme activity and, 26, 27,
45, 46
heat resistance, 264
in leaves, 5
organic complexes with, 5
peptidases and, 31
peroxidase of leaves and,
136
photosynthesis and, 28
in roots, 4
"total metal effect" and,
45, 46
yeast electrolytes and, 331

Maleic hydrazine
herbicidal effect of, 220
phytotoxicity and, 220

Malic acid, photosynthesis
and, 94, 95, 103

Manganese
amino acid syntheses and,
6
arginase activity and, 31
auxin action and, 174
carbon dioxide fixation and,
30
carboxylase activity and,
45
chlorophyll synthesis and,
7
deficiency of, 36, 46
enzyme activity and, 26, 27
hexokinase activity and, 46
indoleacetate oxidation and,
190, 191
iron deficiency and, 35
laccase activity and, 39
in leaves, 5
nitrate assimilation and,
32, 232

nutrition and, 29-32
organic acids and, 29-32,
35
organic complexes with, 5
peptidase activity and, 31
peroxidase activity and, 36
photosynthesis and, 35, 109
respiration and, 31
root growth and, 6
tissue culture and, 233
"total metal effect" and,
45
toxicity of, 36
uptake of, 7

Membranes
artificial, transport through,
336
cells of
chelation and, 5
lipid, 2, 3, 15
transport through, 1-2, 15

Mercury vapor, damage by,
310

Meristems, apical, see
Apical meristems

Metabolic inhibitors
Pasteur effect and, 155, 156,
160
phosphorylation and, 160
photosynthesis and, 99, 106,
107

Metabolism, see **Carbohy-
drate metabolism**; and
Respiration

Metal binding, removal and,
11

Metastable state
in photosynthesis, 57-58
reversible bleaching in
chlorophyll and, 59

**2-Methyl-4-chlorophenoxy-
acetic acid (Methoxone)**
on growth, 210-19
mineral uptake and, 213

Meyerhof quotient, definition
of, 150

Minerals
absorption and transport of,
1-20
accumulation in, 9-13
carrier systems in, 13, 14
cell metabolism and, 9-15,
17, 33
chemical combination and,
5-9
in conducting system, 18,
19
cytoplasm structure and,
14-17
diffusion and, 2-3
Donnan equilibrium and,
3-5
light and, 12
mitochondria and, 16
in roots, 3-5, 17, 18
surface potentials and, 15
chelation and, 5, 7

- complex metal ions, 34, 47
heat resistance and, 262
iron deficiency by, 34
nutrition and, 25-47
requirements for, tissue culture and, 231-34
in soil, 3
"total mineral effect," 45, 46
uptake of, phenoxycetates and, 213
Mitochondria
ion transfer and, 16
metabolism and, 16
Molecules, excitation energy in, conversion of, 56-57
Molybdenum
ascorbic acid formation and, 43, 44
deficiency of, 41-43
enzyme activity and, 43
iron deficiency and, 43, 44
nitrogen fixation and, 42-44
nutrition and, 41-44
organic complexes with, 5
pigments and, 44
role of, 42-43
in nutrition, 42
tissue culture and, 233
tolerance to, 44
toxicity of, 44
uptake of, 7
Morphogenesis, experimental, 269-89
on apical meristems, 269-89
differentiation and, 270
growth regulators and, 280-82, 287
surgical treatment and, 271-77
tissue culture and, 284-89
in vascular plants, see Apical meristems, morphogenesis on, experimental
vitamins and, 287
Muscle
ion exchange in, 326, 327, 331, 333
osmotic behavior of, 330
permeability of, 326, 330
phosphate uptake by, 336
resting potentials of, ions and, 327
- N**
- Naphthalenes
drought resistance and, 253
herbicidal effect of, 207, 208
Narcotic substances, photosynthesis and, 56, 61, 63-73
Nerve
action potentials in, sodium and, 326
conduction in acetylcholine and, 326
ions and, 326
electrical characteristics of, 326
ion exchange of, 327, 331, 333
membrane of, permeability of, 326
potassium loss and anoxia, 327
sheath permeability of, 328
Nitrates
assimilation of manganese and, 32
tissue culture and, 232, 237
vitamins and, 236
reduction of molybdenum and, 42-44
porphyrins and, 33
tissue culture and, 286
uptake and fate of, 6
Nitrites, nitrogen metabolism and, 6
Nitrogen
fixation of, sulfur and, 44
inorganic, source in tissue culture, 232
in leaves, 5
metabolism, uptake and, 6
oxides, damage by, 310
reduction of, molybdenum and, 42-44
supply of, frost, heat, and drought resistance, 265
tissue content of, herbicides and, 212
transport of, 18
Nutrients, inorganic, absorption and transport of, 1-20
Nutrition
isolated organs, requirements of, 231-40
isolated tissues, requirements of, 231-40
auxins and, 238, 239
inorganic, 231-34
organic, 234-38
vitamins and, 235, 236
minerals and, 25, 47
- O**
- Oils
nerbicidal effects of, 206-9
phytotoxicity of, 207-8
Olefin gases, damage by, 315, 316
Organic acids, ion transport and, 10, 11
Organs, nutritional requirements of, 231-40
Osmotic pressure of cells
drought and, 253, 254
heat and, 262
isotonic concentration, diversity of, 335
Osmotic work, metabolism and, 9
Ovary, auxin in, 189
Oxidation-reduction potentials, of metal ion complexes, 47
Oxygen
concentration of, fermentation and, 148, 149, 151, 154, 164-66
deficiency of capillary permeability and, 330
potassium loss from cells in, 327
photosynthesis and, 74-77
evolution of, 107-13
isotope studies of, 88, 89
poison effects on, 99
- P**
- Pasteur effect, 145-67
absence of, 154, 155
coenzyme I and, 157-59
definition of, 149, 150
demonstration of, 151-54
explanation of, 157-67
factors affecting, 154
inhibition of, 155, 156
oxidative anabolism and, 160-67
phosphate cycle and, 159, 160
see also Respiration
Pectins, salt absorption and, 4
Pentachlorophenol, herbicidal effects of, 209
Peptidases, activity of, ions and, 31
Permeability, 323-37
active ion transport, 331, 332
constants of, 326
drought resistance and, 255
heat resistance and, 264
to inorganic substances, 326-31, 333, 334
isotope tracer studies, 324
multicellular membranes, 328
theory of, 336, 337
Peroxidases
activity of ions and, 36
porphyrins and, 33
indoleacetate inactivation and, 192
Phenol oxidases
activity of, boron and, 37
activity of, copper and, 38-40

- chloroplasts and, 40, 110
- in tissues, 33
- Phenoxyacetic acid, growth promotion by, 175
- Phenoxyacetic acid derivatives
 - animal toxicity of, 218, 219
 - biochemical effects of, 210, 212
 - crop yields and, 214, 215
 - growth and, 211, 213
 - herbicidal effects of, 214-19
 - mineral uptake and, 213
 - penetration of, 211
 - persistence in soil, 218
 - phytotoxicity of, 210-14
 - post-emergence application of, 214-18
 - pre-emergence application of, 216-17
 - seed production and, 216
 - translocation of, 211
 - weed control and, 214-18
 - see also individual species
- see also 2,4-Dichlorophenoxyacetic acid; 2-Methyl-4-chlorophenoxyacetic acid; and, 2,4,5-Trichlorophenoxyacetic acid
- Phloem
 - herbicide movement in, 211
 - water and salt transport in, 18, 19
- Phosphatase, calcium and, 26
- Phosphates
 - cell uptake of, 3, 5-8, 18, 331, 335, 336
 - permeability to, 330
 - solubilizing effect of, 333
 - tissue culture and, 232, 234
 - transport of, 19
 - uptake by yeast, 325
- Phosphoglyceric acid, photosynthesis and, 68, 81, 90-93, 98-105
- Phosphorus
 - carbohydrate metabolism and, 27, 28
 - metabolism of, 27-29
 - protein synthesis and, 28
 - pyridoxyl phosphate, 28
- Phosphorylation
 - boron and, 37
 - 2,4-dichlorophenoxyacetic acid and, 12
 - enzymes in, 27, 28
 - glycolysis rate and, 159
 - inhibitors of, 160
 - ion transport and, 11, 12
 - magnesium and, 26
 - nitrophenols and, 204
 - Pasteur effect and, 159-60
 - photosynthesis and, 28
 - potassium and, 25
 - protein synthesis and, 12
 - sugar utilization and, 234
 - zinc and, 37
- Photochemistry
 - metastable state and, 57-58
 - in photosynthesis, 54-56
- Photoperiodism, frost resistance and, 247-48
- Photoreduction
 - algae and, 106
 - hydrogen evolution and, 106
 - photosynthesis and, 105-7
- Photosynthesis, 53-85
 - carbon dioxide reduction, 107
 - carbon dioxide uptake and, 68, 78, 79, 81-83, 90, 92, 96, 98-100
 - carbon isotope studies of, 90, 91
 - carbonic anhydrase and, 110
 - catalase and, 110
 - chemical kinetics of, 73-75
 - chlorine and, 26
 - chlorophyll fluorescence and, 54-71, 73, 78
 - chlorophylls in, 135
 - chloroplast reactions, 107-13
 - copper and, 40
 - cyanide inhibition of, 71-73, 81
 - dark fixation after, 96-101
 - poison effects on, 99, 100
 - exchange reaction in, isotope studies, 90, 91
 - excitation energy conversion in, 56-71, 73, 74
 - fluorine injury and, 307
 - heme pigments in, 115, 118, 130
 - hypothetical 2-carbon acceptor and, 101-5
 - induction periods of, 77-82
 - inhibition by radiation, 73
 - inorganic ions in, 109-10
 - intermediates in, 91-96
 - ion effects on, 109, 110
 - iron and, 35
 - kinetics and chemistry of, 87-113
 - magnesium and, 26
 - manganese and, 35
 - metabolic inhibitors and, 72
 - metastable state and, 57-58
 - narcotic influences and, 56, 61, 63-73
 - one-carboxylation cycle and, 104-5
 - oxygen effect on, 74-77
 - oxygen as Hill reagent, 110, 111
 - oxygen production by, 80, 99
 - phenoxycetates and, 213
 - phosphoglyceric acid and, 68, 81, 90-93, 98-105
 - phosphorylation and, 28
 - photochemistry of, 54-56
 - photoreduction and, 106-7
 - photosynthetic unit, 73-75
 - physical background of, 53-85
 - chlorophyll fluorescence in, 54-56
 - photochemistry in, 54-56
 - protein synthesis and, 89, 90
 - quantum yields in, 82-85
 - reduction processes in, 68
 - respiration and, 54, 72, 88-90
 - oxygen isotope studies, 88, 89
 - saturation rate, oxygen on, 75-77
 - sulfur dioxide injury and, 297, 298
 - two-carboxylation cycle and, 102-4
- Phototropic responses, 193
 - auxin inactivation and, 193
- Phycocyanins, 128
- Phycocerythrins, 128
- photosynthesis and, 129
- Phytotoxicity, 199-210
 - assessment of, 200-3
 - of growth regulators, 210-19
 - hydrogen ion concentration and, 202
 - see also individual compounds
- Pigments
 - biosynthesis of, 115, 141
 - see also Anthocyanins; Chlorophyll; and related substances
- Plasmolysis
 - frost resistance and, 250
 - heat resistance and, 261
- Pollen, auxin in, 189
- Polysaccharides, synthesis of, 162
- Porphyrins
 - biosynthesis of, 119-27
 - identification of, 137-39
- Potassium
 - absorption of, 3, 8
 - accumulation of
 - growth regulators and, 19
 - metabolism and, 13, 14
 - bacterial exchange of, 330, 333
 - cell exchange of, 326, 327, 330, 331, 333
 - cell organization and, 25
 - cell loss in anoxia, 327
 - chlorophyll synthesis and, 25
 - deficiency of, 331
 - drought resistance and, 256, 258
 - enzyme systems and, 25

- heat resistance and, 264
 ion carrier systems and, 13
 iron and, 25, 26, 32-34
 in leaves, 5
 phosphate assimilation and, 336
 phosphorylation and, 25
 photosynthesis and, 109
 protein binding of, 8, 25
 in roots, 4
 supply of, ionic composition of plant and, 4
 tissue content of, phenoxylacetates and, 213
 yeast exchange of, 331
 Potassium cyanate, herbicidal effects of, 209
 Prodigiosin, biosynthesis of, 124
 Proteins
 auxin binding by, 170
 heat resistance and, 263
 synthesis of
 apical meristems and, 286
 ion accumulation and, 12
 oxidative anabolism and, 161
 phosphorylation and, 28
 photosynthesis and, 89, 90
 tissue content of
 frost resistance and, 249
 herbicides and, 212, 213
 Protochlorophyll, chlorophyll and, 131-34, 139
 Protoplasm
 drought resistance and, 252-55
 viscosity of, 255
 Protoporphyrins
 biosynthesis of, 119-27, 139
 chlorophyll precursor, 131
 chlorophyll synthesis and, 26, 34
 magnesium and, 131
 pigment synthesis from, 115, 129-31, 139
 Pyridoxine, tryptophane formation and, 183
 Pyridoxyl phosphate, transamination and, 28
 Pyrroles, porphyrin synthesis and, 123-25
 Pyruvic acid, photosynthesis and, 91, 93, 94, 103
- Q
- Quinone, photosyntheses and, 108, 112
- R
- Red blood cells
- fatty acid penetration of, 333
 hemolysis, 330, 334, 335
 permeability of, 329, 330, 334
 Resistance
 drought, see Drought resistance
 frost, see Frost resistance
 frost, drought, and heat relations between, 264-66
 theory comparisons of, 265-66
 heat, see Heat resistance
 Respiration, 145-67
 acetaldehyde and, 158
 ascorbic acid and, 38
 azide and, 11
 carbon dioxide production and, 146
 cold and, 246, 247
 cyanide and, 11
 growth substances and, 191
 ion transfer and, 9-11, 13-15
 Krebs cycle and, 16
 metabolic inhibitors and, 155, 156, 160
 mitochondria and, 16
 nitrogen metabolism and, 6
 nitrophenols and, 203-5
 osmotic work and, 9
 Pasteur effect in, 145-67
 phosphate uptake and, 5
 phosphorylation and, 159, 160
 photosynthesis and, 28, 54, 72, 88-90
 protein synthesis and, 89-90
 salt uptake and, 9-11, 33
 sulfur dioxide and, 298
 in tissue culture, 239
 water transport and, 17
 Reversible bleaching, in chlorophyll, 59
 metastable state and, 59
 Roots
 auxin and, 188, 189
 formation of, 188
 growth of, 6
 inhibitors of, 211
 manganese and, 32
 mineral content of, 4
 mineral uptake by, 3-5, 7
 respiration and, 10
 nodules of, heme compounds in, 33
 respiration of, 11
 surface potential of, 15
 thiamine synthesis by, 235
 tissue culture of, 231, 232, 234, 235, 238
 transport across, 17, 18
- S
- Salt
- exchange in frogs, 328, 329
 uptake by plants, 324
 see also Minerals
 Scutellum, auxin inactivation in, 185
 Seeds, auxin in, 185, 189
 Selby report, 295, 296
 Smog
 aerosols, 314, 315
 damage by, 311-15
 oxygenated organic components and, 312-14
 sulfur dioxide and, 313
 Smoke, damage by, 293
 Sodium
 absorption of, 4, 8
 bacterial exchange of, 330
 cell permeability to, 324, 330
 muscle contraction and, 326, 328, 331, 333
 nerve conduction and, 326, 327, 333
 protein binding of, 332
 in roots, 4
 Soil
 fluoride in, 307
 herbicide persistence in, 218
 inorganic nutrients in, 3
 Starch, tissue content of, herbicides and, 212
 Stems, auxin in, 187
 Streptomycin
 chlorophyll formation and, 136, 137
 chloroplasts and, 137
 Sucrose, root nutrition and, 234, 235
 Sugars
 drought resistance and, 256
 frost resistance and, 248
 tissue content of, herbicides and, 212, 216
 tissue culture and, 234, 235
 Sulfamate, ammonium, herbicidal effects of, 210
 Sulfhydryl compounds, cell permeability, 334
 Sulfur
 damage by, 317
 metabolism and, 44, 45
 nitrogen fixation and, 45
 Sulfur dioxide
 chlorophyll and, 294
 damage by, 293-302
 smog and, 313
 fate in leaves, 298
- T
- Temperature, see Frost resistance; and Heat resistance
 Thiamine, synthesis of, in roots, 235
 Tissue culture

in vitro, 284-87
 ions and, 231-32
 morphogenesis in, 284-89
 nutritional requirements
 in, 231-40
 requirements for, 285, 286
 nitrogen sources, 286
 respiration in, 239
 vitamins and, 235-36
 Trail study, 299-301
 Transpiration, herbicide
 movement and, 211
 Transport of ion, 17, 18
 Tricarboxylic acid cycle,
 see Citric acid cycle
 Trichloroacetates, herbici-
 dal effects of, 210
 2,4,5-Trichlorophenoxyace-
 tic acid (2,4,5-T), on
 woody species, 218
 Trioses, photosynthetic
 origin of, 92-96, 104
 Triphosphopyridine nucleo-
 tide, photolysis and,
 108, 111
 Trypsin, auxin release by,
 171
 Tryptophane
 auxin production from, 238
 formation of, 183
 indoleacetaldehyde and,
 182
 indoleacetic acid from,
 170, 171, 179-81
 zinc and, 184
 Tubers, auxin in, 186, 189
 Tumors, plant
 auxin and, 239
 barbiturates and, 239
 tissue culture of, 232
 Tyrosinase, activity of,
 boron and, 36

U

Uranium, yeast metabolism
 and, 8
 Urethane, photosynthesis
 and, 61, 64, 67, 72

V

Vacuoles, membrane of, ion
 transfer and, 16
 Vascular plants
 morphogenesis in, experi-
 mental, 269-89
 see also Apical meristems
 Viruses, osmotic behavior
 of, 335
 Vitamin B₁₂
 cobalt and, 40
 porphyrin synthesis and,
 123
 Vitamins
 morphogenesis and, 287
 nitrate assimilation and,
 236
 synthesis of, 236
 tissue content of, herbicides
 and, 212
 tissue culture and, 235, 236

W

Water
 active transport of, 334
 deprivation of, see Drought
 resistance
 exchange in frog skin, 328
 heat resistance and, 261
 photolysis of, 107
 tissue content of
 drought resistance and,
 254-59

frost resistance and, 248
 transport of, in xylem, 17
 Weeds, control of, 119-221
 see also Dinitro-alkyl-
 phenols; Phenoxyacetic
 acid derivatives; and
 individual species
 Woody species, weed control
 of, 218

X

Xylem, water and salt
 transport in, 17-19

Y

Yeast
 carbon metabolism of, 161
 cobalt and, 40
 decarboxylation by, 30, 31
 mycelial development, 40
 Pasteur effect in, 152, 155,
 157
 phosphate uptake of, 325
 phosphorylation and, 25
 enzymes of, 26, 28
 potassium exchange of, 331

Z

Zinc
 auxin production and, 38, 184
 deficiency of, 37, 38
 enzyme activity and, 37, 38
 in leaves, 5
 nutrition and, 37, 38
 organic complexes with, 5
 tissue culture and, 233
 tryptophane formation and,
 184
 uptake of, 8